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Comparative Analysis 1989 Performance Quebec Groundfish Trawlers 50' to 64'11"

Economic and Commercial Analysis Report No. 69

Pêches et Océans Fisheries and Oceans

Canada

Comparative Analysis 1989 Performance Quebec Groundfish Trawlers 50' to 64'11"

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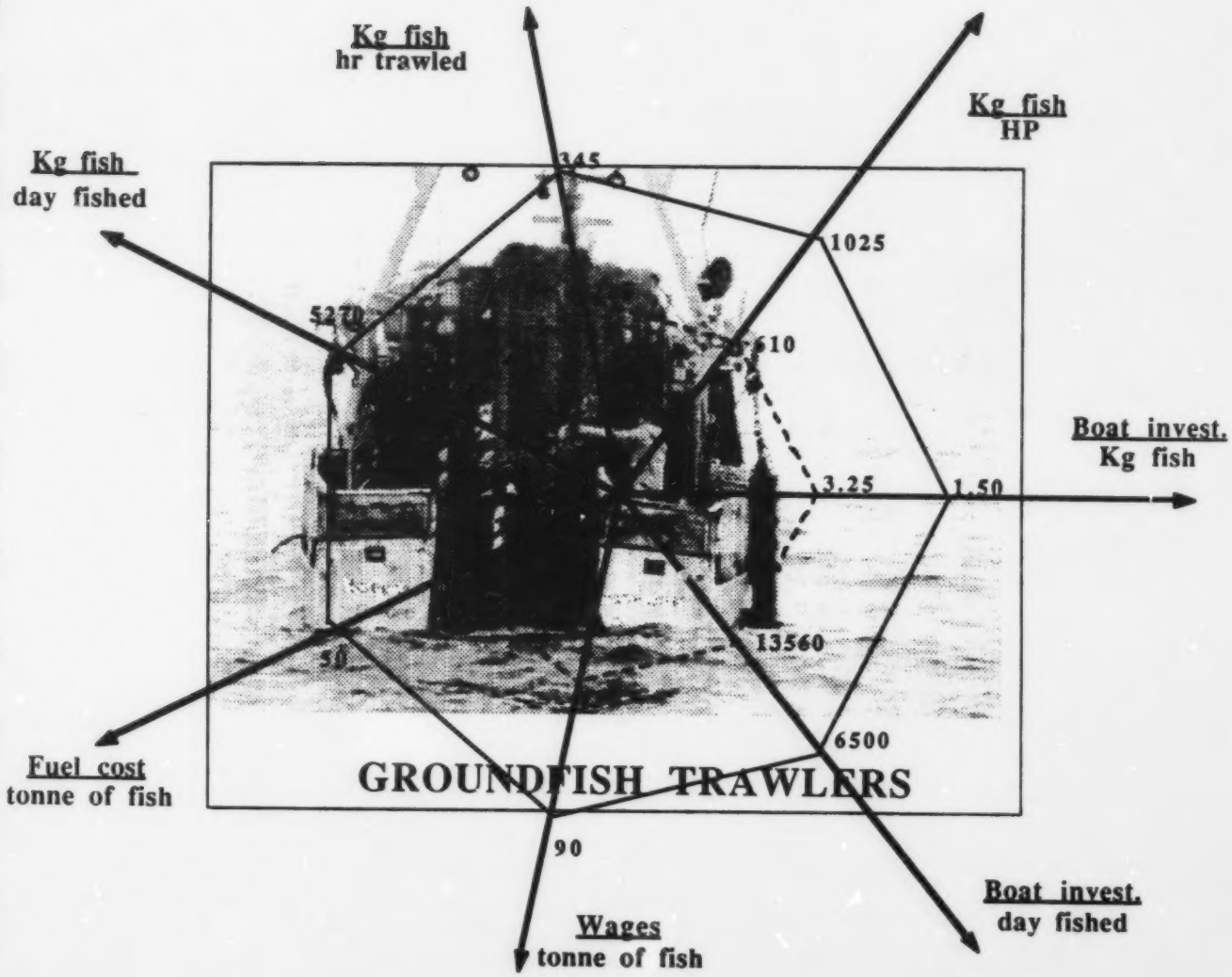
COMPARATIVE

ANALYSIS



1989

FOREWORD

This study was carried out using information supplied voluntarily by fishermen to the Department of Fisheries and Oceans (DFO) on the 1989 season for the study on Costs and Earnings of Quebec Fishing Vessels. Information on fishing effort was obtained from vessel log data compiled by the Statistics Division.

This is the first study of its type on the fishing sector, and comparative analysis will benefit from the experience acquired on this project. One example of possible improvements would be the preparation of a questionnaire more appropriate to this type of analysis. The results obtained in this initial experience were nevertheless very revealing. It might be well to point out that the accuracy of comparative analysis depends to a great extent on the quality of information provided by fishermen. The same is true of the accuracy of diagnosis for each of the fishing enterprises included in the study.

We trust that this initiative will meet some industry needs and be as successful as those carried out on the agricultural industry, in particular on the dairy sector, where this formula has been in use for a number of years.

ABSTRACT

Faced with lower world prices and limited resources, Quebec fishermen have had very little room to manoeuvre. Since the fisherman has no influence on the selling price, and even less on the resource, the only avenue left open to him is sound management of his business. But how can he improve it? Is there a magic formula for improving efficiency? Comparative analysis is certainly a tool at which he should take a closer look. By comparing his performance with that of other fishermen, he will discover the strengths and weaknesses of his own business. With the introduction of individual quotas, this tool will help him optimize the economic return of the resource allocated to him.

SOMMAIRE EXECUTIF

Face à des prix mondiaux à la baisse et une ressource limitée, le pêcheur québécois n'a que très peu de latitude. Considérant qu'il ne peut agir sur le prix du poisson ni sur la ressource, le seul domaine sur lequel il peut intervenir demeure son entreprise. Mais dans quelle mesure doit-il changer la gestion de son entreprise? Quelle est la recette miracle lui permettant d'améliorer son efficacité? L'analyse comparative est certainement une avenue qu'il pourrait explorer. Par une comparaison avec d'autres pêcheurs, l'analyse comparative lui permet de cibler les forces et les faiblesses de son entreprise. De plus, dans le contexte de l'avènement des quotas individuels, cet outil permet au pêcheur d'optimiser le rendement économique de la ressource qui lui est allouée.

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INTRODUCTION

The fishing industry in Quebec has its hands tied, imprisoned in a market context in which the fisherman has very little influence on conditions. He exploits a resource that is often limited and sometimes even declining, and has very little control over fish prices, since these are strongly influenced by world prices for processed product. Caught between two forces, the resource and the market, the fishing enterprise is vulnerable to any fluctuations that may occur.

As an owner-fisherman, the only element on which he can act is his own enterprise. By making sound management decisions, he can turn it into a profitable business, less vulnerable to the biological and economic forces acting on him. Effective control and proper dosing of factors of production should lead to an improvement in the fisherman's earnings, and this will result in economic growth in the sector as a whole.

But how is this fine-tuning to be achieved? What is the magic formula for efficient operation? Comparative analysis, commonly known as group analysis, may partially meet this need by providing the fisherman with a tool to guide the management of his business.

1. COMPARATIVE ANALYSIS: PRESENTATION

1.1 What is comparative analysis?

Comparative analysis is a tool that can help a group of businesses better understand and analysis their operations. It is an ideal tool, but one to which few small businesses have access. It is the result of putting the financial and technical results of group members together in order to make constructive comparisons.

What could be easier than comparing one's own business to that of a group or, if feasible, a neighbour in order to detect its strengths and weaknesses? The purpose of comparative analysis is thus to examine one's own business by comparing it with the group. This comparison is obviously not concerned with separating the "good" fishermen from the "bad", but rather with helping each of them to become more efficient.

It is also intended to identify statistically the parameters that may explain why some fishermen are more successful than others. Once these parameters have been identified, it is easier for the fisherman to make improvements. Comparative analysis can help the fisherman work out a critical path for improving efficiency.

1.2 Captain's standardized earnings (CSE)

In a market system like ours, the ultimate goal of any business owner is to make the best possible use of the resources at his disposal, e.g. his boat, employees, fuel costs, etc., to earn a satisfactory income. Some fishermen will prefer to hold on to their old boat and land less fish, but have lower financing costs. Others will prefer to buy a newer vessel, make a greater effort and catch more fish in order to increase their gross

earnings. But what is the ideal strategy for making the most profits?

The purpose of this exercise is to determine why some enterprises succeed in making more money than others. The problem here is the meaning of "making more money than others". The cash flow surplus,[1] i.e. the owner-captain's earnings before income tax, is one of the ways of assessing this, but there are many other ways. When we compare enterprises, however, it is important that we compare them on the same basis. If we compare a fisherman who borrows to pay for his boat with another who can buy one without going into debt, we are not comparing them on the same basis, we are giving the advantage to the fisherman who has no debt, whether or not he practices his craft efficiently. Since the goal of comparative analysis is to improve the efficiency of enterprises, they must be standardized in order that their efficiency will reflect their investments rather than their debts. The parameter for comparison thus becomes the captain's standardized earnings.[2] This is obtained by deducting from the total earnings of the enterprise all expenses except those related to boat payments. These payments are then replaced by items that reflect the level of capitalization, such as depreciation and capital remuneration. It is important that the reader understand this concept of captain's standardized earnings (CSE), since we will refer to it throughout this study.

---

1 Cash flow is obtained by considering only the inflow and outflow of funds that actually occur during the fiscal year. It provides us with information on financial performance during the year in question and represents the owner-captain's salary before tax. More details on this may be found in the section on "Methodology".

2 Captain's Standardized Earnings = CSE

Calculation of Captain's Standard Earnings[3] (CSE)

Standardized earnings =		- total earnings
	less	- variable operating costs
		- maintenance costs
		- gear costs
		- fixed operating costs
		- labour costs
		- depreciation
		- capital remuneration

1.3 Theoretical background of comparative analysis

The fisherman has the following options for improving his CSE:

1 - Increase earnings, by increasing the quantity fished and/or the selling price per kilogram.

2 - Decrease production costs, which may involve decreasing costs relating to boat financing, lowering variable costs such as fuel costs, reducing labour costs, etc.

3 - A combination of 1 and 2, which is not always possible.

Based on these three possibilities, we will establish some technical and economic parameters on which the fisherman must act to maximize income and thus CSE. Questions that might be asked include: Do fishermen who land the most fish make the highest CSE? Is it fishermen who spend the most days fishing who make the highest CSE? Do the fishermen who have the newest boats make the highest CSE? Answers to all these questions may be obtained by comparing enterprises to one another using statistical tests such

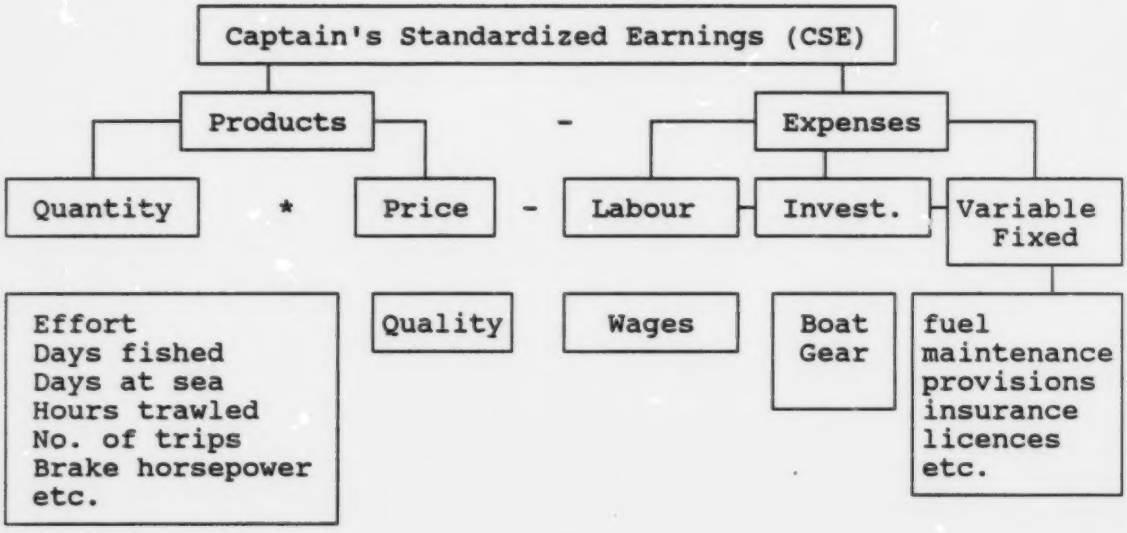
---

[3] For definitions of the variables making up the captain's standardized earnings, see the Methodology section.

as correlation and difference tests on averages.

Identifying the parameters that may affect CSE may be done by breaking income or CSE down into its component parts.

Accounting analysis model:

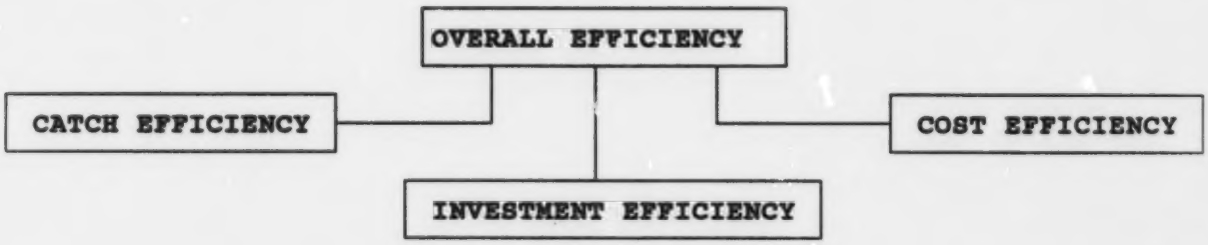


From a management operations viewpoint, a fisherman would have a problem working on all three options at once. The various management elements are interrelated in such a way that the fishermen who acts on one element should be in a position to assess the impact on the other components. Thus, a fisherman who wanted to land more fish would be tempted to invest in a boat with a larger fishing capacity, but he might then risk having to make larger payments. In the final analysis, he would probably have more fish, but at what price? Would this mean his earnings would be greater?

1.3.1 Definition of analysis model parameters

Based on this simplified analysis, we can define a certain number of parameters that may influence CSE. In order to obtain a clear picture of how a fishing enterprise works, these earnings may be divided into three major areas of activity, under which each of the technical and economic parameters may be listed:

- **Catch and effort**
- **Investment**
- **Operating costs**



An enterprise will be considered completely efficiency only if it is efficient in all three sectors: CATCH, INVESTMENT AND COSTS.

The CSE or final earnings will depend on these three areas of activity. In each area, we can now define parameters that may affect CSE.

Each parameter taken individually cannot alone explain the differences in performance between enterprises. Several parameters are normally necessary to make a complete diagnosis of the enterprise. For example, a high catch level would only yield high net earnings if costs were minimal, and investments must be made bearing in mind the technical/economic situation of the enterprise.

Before going on to the comparative analysis, let us first look at the environment in which the fleet under study works: this is the Quebec fleet of trawlers between 50' and 64'11" long, normally known as the enterprise allocation (EA) fleet.

Integrated analysis model:

Captain's Standardized Earnings

CPE

CATCH[4] and EFFORT

Quantity/day fished
Value/day fished
Hours trawled/day fished
Qty/brake horsepower
Qty/hour trawled
Price of fish
Qty/crew member
Qty/dollar wages
Etc.

INVESTMENTS

Boat investment/kg fish
Boat investment/day fished
Boat investment/hour trawled

OPERATING COSTS

Wages/kg fish
Wages/hour trawled
Fuel cost/kg fish
Fuel cost/day fished
Fixed costs/kg fish
Maintenance,rep./kg fish
Wages/day fished
Etc.

* By "quantity", we mean the quantity of fish sold. The same applied to "value", which means the value of fish sold

[4] Catch = landings

2. DESCRIPTION OF THE AVERAGE ENTERPRISE AND ITS WORKING ENVIRONMENT

2.1 Description of the new management climate in which the fleet works

Since 1989, the Quebec trawler fleet (50' - 64'11") has been working under a new management system, the "enterprise allocation". This is a relatively new term to the fishing industry. It is a resource-sharing system introduced by the Department of Fisheries and Oceans (DFO) together with industry under the Gulf of St. Lawrence Enterprise Allocation Program.

This program assigns each license-holder a specific share[5] of the total allowable catch. In concrete terms, this means that each fishing enterprise knows at the beginning of the season the volume of fish it will be allowed to catch. The quantity allocated to it is its "quota". We speak of "individual quotas" because this quantity is allocated exclusively to the enterprise. With the this new management system, the fleet thus moved from a free competition system to a system in which each enterprise may take its quota when it wants to, free from any competition.

The new rules will certainly have an effect on the management philosophy of the owners of these fishing enterprises. Since they are no longer obliged to "race for the resource", owners can now adapt their operations based on their quotas. This new philosophy makes comparative analysis all the more important.

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5 For Gulf trawlers, the allocation method took into consideration the economic and operating characteristics of enterprises based on length categories and also the 1984-1986 performance for each enterprise.

2.2 The average enterprise: a physical portrait

The average enterprise in the groundfish trawler sector in 1989 was a 57'2" vessel with a gross tonnage of 54 tonnes. The brake horsepower of this vessel was 427 BHP. The average age of the boats in our sample was 6 years.

Table 1: Avrerage enterprise characteristics

Length of boat	57'2"
Gross tonnage	54.3 tonnes
Brake horsepower	426.6 BHP
Age of boat	6 years

2.3 Purchase and financing of average enterprise assets

The value of assets was, on average, $830,000, of which $788,300 was related to the boat. Fishing gear accounted for barely 3% of total as-

Table 2:

Balance Sheet for Average Enterprise
as of December 31, 1989

ASSETS		LIABILITIES	
Boat	788,346.20	Loans prov. govt.	352,880.20
Vehicles	11,725,80	Loans bank	189,733.40
Facilities	2,774.20	Loans companies	-0-
Equipment	644.50	Loans plant	1,612.90
Gear	24,403.20	Loans other	806,50
		OWNER'S EQUITY	
		Grants	188,268.10
		Personal investment	94,612.90
TOTAL	**$827,913.90**	**TOTAL**	**$827,913.90**

assets, or $24,400. The average owner owns 35% of his enterprise, with the remainder being financed by loans. In this connection, the provincial government is the fishermen's main creditor, with 64.7% of total loans, followed by the charter banks with an average of approximately $190,000, representing nearly 35% of total debt. Other sources of financing are negligible. Slightly over 60% of fishermen received government assistance for their investment. The average grant received was approximately $307,000, which represents $188,268 for the average enterprise in this fleet.

2.4 Fishing effort and landings for average enterprise

Trawlers made an average of 23 trips, for a total of 105 days at sea, of which nearly 81.4 days were devoted specifically to fishing activities. They trawled an average of 1229 hours per year. There were normally three or four crew members on the boat. Total initial allocations for 4T sole and 4T and 4RS cod were 305 tonnes on average. Total landings for the average enterprise were 347 tonnes.

Table 3: Average enteprise landings by species

Species	Quantity (kg)	Value ($)
Cod	280 455	139 566
Perch	34 534	12 537
Atlantic halibut	264	615
Sole (all species)	26 434	17 295
Turbot	4 369	3 203
White hake	795	163
Wolf fish	52	31
Monkfish	10	14
TOTAL	**346 913**	**173 424**

Table 4: Initial and final allocations

Initial allocations	
Cod (4RS)	42,839
Cod (4T)	243,839
Sole (4T)	18,226
Total initial allocations	**304,903**
Final allocations	
Cod (4RS)	51,152
Cod (4T)	246,340
Sole (4T)	18,226
Total final allocations	**315,718**

2.5 Average enterprise financial statements

Total earnings for the average enterprise were nearly $175,000 for the year 1989. After deducting various operating expenses, the average cash flow was $23,332. Captain's standardized earnings as defined above were $14,822 for the average enterprise.

Table 5: Average enterprise income and cash flow statements

INCOME		
Sales of fish and other income		174,101.50
EXPENSES		
-Fuel	21,747.80	
-Bait, ice and salt	3,280.10	
-Provisions	4,798.00	
-Unemployment insurance	720.80	
-CSST	2,043.60	
-Labour misc.	2,351.00	
-Other variable costs	2,582.20	
Variable operating costs	37,523.60	
Maintenance and repair	7,804.80	
Maintenance and repair, gear	6,394.70	
Total fixed costs	16,824.50	
Crew salaries	41,010.80	
TOTAL EXPENSES (before financial expenses)		109,558.40
GROSS MARGIN		**64,543.10**
-Net gear acquisition	2,016.10	
-Capital repayment	21,096.20	
-Interest expense	18,098.80	
CASH FLOW		**23,332.00**
-Depreciation	21,820.40	
-Return on capital	27,900.70	
CAPTAIN'S STANDARDIZED EARNINGS		**14,822.00**

Variances between enterprises are quite significant, with CSE as much as $120,439 in one case and down to -$102,343 in another. How can we explain such major differences? Why do some fishermen earn a good income while others show a deficit? For answers to these questions, let us now go on to our main concern, the results of comparative analysis.

3. WHAT PARAMETERS HAVE THE GREATEST IMPACT ON CSE?

3.1 Correlation analysis

Once we have determined, through the CSE, which fishermen are the most efficient, it becomes interesting to discover how they succeed in earning this level of income. Using statistical tests, such as the calculation of correlation coefficients, it is possible to identify which of the parameters already discussed are most likely to directly influence the fisherman's income. In statistical terms, this means that if the correlation coefficient of a parameter (e.g. quantity of fish/hour trawled) with the captain's standardized earnings (CSE) is significantly different from zero at a level of confidence of 10%, it has a direct impact on earnings and will thus be used in the analysis.

After correlation coefficients had been calculated, several parameters proved to be strongly correlated with CSE. Using a difference test on the averages, it was possible to eliminate those parameters that did not differentiate significantly between the most efficient and the least efficient fishermen and thus keep only the most significant.

To perform this test, three groups of enterprises were formed based on the captain's standardized earnings and thus their economic efficiency. The leading group was made up of seven enterprises with a CSE equal to or greater than $25,000; enterprises with a CSE less than $25,000 but greater than zero formed the intermediate group, numbering 15 enterprises, and those (9 enterprises) in which CSE was negative formed the "trailing" group. The purpose of this exercise was to determine whether, for the parameters used, results differed between the leading, intermediate and trailing groups.

Following these two statistical tests, correlation and difference of averages, seven parameters divided into three areas were selected as having a significant effect on the captain's standardized earnings (CSE).

Table 6: Coefficients of correlation with CSE for the seven parameters chosen

Parameters	Correlation	Pvalue
Kg of fish/day fished	57%*	.0008
Kg of fish/brake horsepower	61%*	.0003
Kg of fish/hour trawled	61%*	.0003
Boat investment/kg fish	-72%*	.0000
Boat investmentday fished	-31%*	.0934
Wage expense/t fish	-43%*	.0151
Fuel cost/t fish	-62%*	.0002

* These parameters were chosen because they obtained a coefficient of correlation higher than 24% and averages between groups classified by CSE were significantly different from the 10% level.

Pvalue is the probability of making an alpha type error, i.e. the probability of erroneously rejecting the null hypothesis.

3.2 Definition of parameters chosen

1) **CATCH** parameters

Kg fish/day fished

This is the average quantity, in kilograms, that a fisherman catches in a day's fishing. The higher this quantity, the more efficient the fisherman.

Kg fish/brake horsepower (motor strength)

This is the average quantity, in kilograms, that a fisherman catches annually divided by brake horsepower in HP. This parameter shows the level at which the power of the boat is used; thus, a high ratio is an indication of greater efficiency.

Kg fish/hour trawled

This is the average quantity, in kilograms, that a fisherman catches annually, divided by the total number of hours per year the boat trawls. Efficiency is shown by a high figure.

2) **INVESTMENT parameters**

Boat investment/kg fish

This is the cost value (purchase price of boat including all additions and changes made over the years) of all components of the boat (hull, motor, deck equipment, electronic equipment, etc.), distributed over the total quantity of fish caught during the fishing year. This parameter provides information on the minimum quantity of fish necessary to get back one's investment. The lower this figure, the more efficient the enterprise.

Boat investment/day fished

This is the cost value (purchase price of boat including all additions and changes made over the years) of all components of the boat (hull, motor, deck equipment, electronic equipment, etc.), distributed over the number of days fished during the year. This parameter gives a certain indication of the minimum number of days the various investments must be used to recover the investment. A low figure is preferable, since this would mean that less days' fishing would be needed to recover the investment.

3) **COST** parameters

Wage expense/tonne of fish

The amount paid out in wages to all employees (crew and others), except for the captain, divided by the number of tonnes of fish landed. This gives us information on productivity within the enterprise. The lower this figure, the more productive are the funds allocated for labour.

Fuel cost/tonne of fish

The amount spent to buy fuel divided by the quantity of fish. This tells us how efficiently energy costs are used. The lower this figure, the more rational the use of fuel.

A fisherman owning a 50' to 64'11" trawler who wants to improve profits should work on the seven parameters that have the greatest influence on the CSE. But at what level can a fisherman begin to be considered efficient for a given parameter? For example, is a fisherman who catches an average of 3,000 kg of fish per day fished in a given year efficient or inefficient? Determining levels of efficiency or inefficiency is another important component of comparative analysis which, in the final reckoning, will give us a diagnosis of each enterprise.

4. METHOD FOR DETERMINING TRAWLER EFFICIENCY

4.1 Determining the level of efficiency or inefficiency

The efficiency level is the level beyond which there is a strong probability of earning a good CSE. Thus a fisherman who is below the efficiency level for a given parameter is very likely to earn a low income, while if he is above this level, he increases his chances of earning a high CSE, and this likelihood is increased if the enterprise is above the efficiency level for most of the seven parameters.

This is a new type of analysis, and we thus cannot use previous experience in setting efficiency levels. An arbitrary figure for efficiency and inefficiency levels had to be calculated. This was set at 80% of the standard deviation of the average of all enterprises participating in the study. On this basis, an enterprise may be considered efficient in all three fields only if it falls between the values shown in the table below:

Table 7: Determining levels of efficiency and inefficiency

PARAMETERS and PARAMETER FIELDS	UNIT	EFFICIENCY LEVEL	INEFFICIENCY LEVEL
CATCH			
Kg fish/day fished	kg/day	> 5,270	< 3,310
Kg fish/brake horsepower	kg/BHP	> 1,025	< 610
Kg fish/hr trawled	kg/hr	> 345	< 225
INVESTMENT			
Boat investment/kg fish	$/kg	< 1.50	> 3.25
Boat investment/day fished	$/day	< 6,500	> 13,560
COSTS			
Wage expense/tonne fish	$/T	< 90	> 155
Fuel cost/tonne fish	$/T	< 50	> 75

A fisherman who catches more than 5,270 kg per day fished is considered efficient in the CATCH field and is more likely to obtain a high CSE than a fisherman who catches less than 3,310 kg per day fished. But good performance on one parameter alone will not necessarily ensure a high income for the captain. It is not because a fisherman lands more than 5,270 kg per day of fishing that he will earn a high CSE; he must also land this quantity while optimizing his investments and expenses, for example, having invested in his boat not more than $1.50 per kilo of fish sold and spending no more than $50 for fuel per tonne of fish sold, i.e. being efficient in all three fields, CATCH, INVESTMENT and COSTS.

4.2 Quantified evaluation of the efficiency of an enterprise

Using the seven parameters and the levels determined above, the overall efficiency of a fishing enterprise can be calculated on a scale from -7 to +7. This is done in three stages:

1. Determine for how many parameters the enterprise does better than the efficiency level. Each time the enterprise is above the efficiency level for a parameter, one point is awarded. A highly efficient enterprise would thus have an overall efficiency of 7/7.

2. Check on how many parameters the enterprise is below the inefficiency level. Whenever performance is below the inefficiency level for a given parameter, a score of -1 is awarded. A completely inefficient enterprise would score an efficiency of -7/7.

3. Calculate the overall efficiency of the enterprise by combining efficiency and inefficiency ratings, on the assumption that inefficiency on one parameter cancels out the positive effect of efficiency on another parameter. We thus subtract the inefficiency score from the final efficiency score, and this gives us a measurement of the overall efficiency of the enterprise. Overall efficiency may vary from -7 to +7. The objective is of course to come as close as possible to +7, but the

thing to avoid at all cost is an overall efficiency rating of below 0. It should be noted that, for each parameter where the enterprise falls between the two levels, i.e. in the neutral zone of average earnings, the score awarded is 0.

For example, the enterprise that had the highest CSE in 1989 ($120,439) scored higher than the efficiency level for all seven parameters, giving it a score of 7/7.

TABLE 8. Calculating the overall efficiency of the enterprise with the highest CSE

PARAMETERS	UNIT	EFFICIENCY	ENTERP.#1	OVERALL
Kg fish/day fished	kg/day	> 5,270	6,235	1
Kg fish/brake horsepower	kg/BHP	> 1,025	1,247	1
Kg fish/hour trawled	kg/hr	> 345	424	1
Boat invest/kg fish	$/kg	< 1.50	1.02	1
Boat invest/day fished	$/day	< 6,500	6,333	1
Wage exp./t fish	$/t	< 90	74	1
Fuel cost/t fish	$/t	< 50	36	1
TOTAL EFFICIENCY				7/7

* The reader will find more details on the overall efficiency of each enterprise that participated in the study in Appendix 1.

4.3 Visual assessment of trawler efficiency

This is a diagram that shows at a glance the strong and weak points of an enterprise.

Figure 1:

The diagram is built around seven graduated spokes. The seven spokes represent the seven parameters selected to assess the efficiency of a trawler. On each spoke we show the efficiency and inefficiency levels. The solid-line figure is the efficiency polygon and the dotted-line figure the inefficiency polygon.

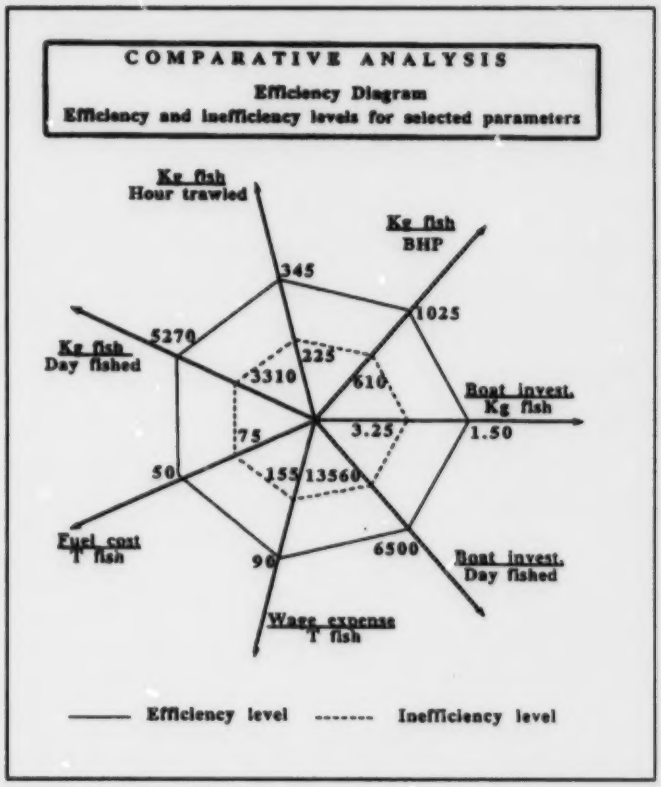
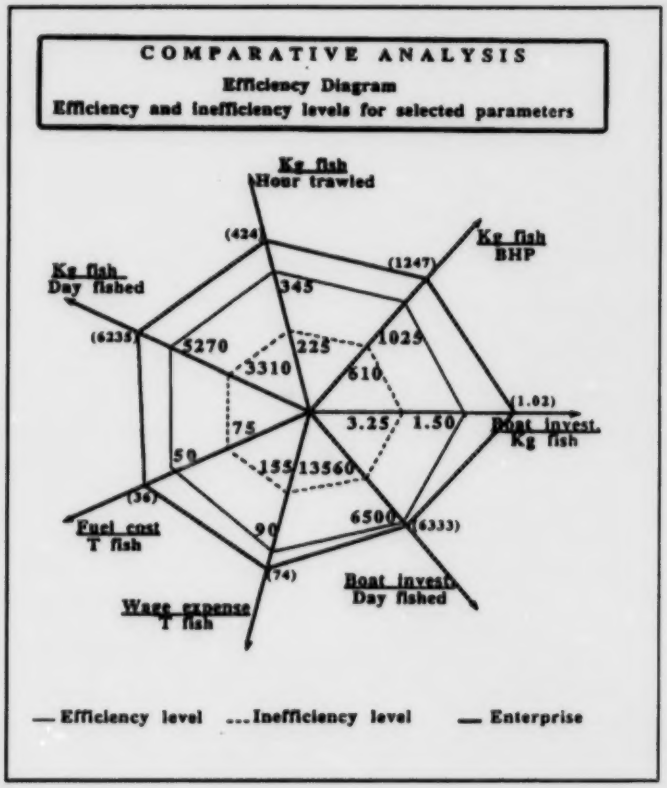


Figure 2:

For a given enterprise, we show on each spoke the value obtained for that parameter, and then the points are joined up, giving us a seven-sided polygon. The objective is to have the actual efficiency polygon of the enterprise outside the efficiency polygon determined previously, or at least not to have any part of the enterprise efficiency polygon inside the inefficiency polygon.

In practice, the larger the area of the enterprise efficiency polygon, the higher the CSE level and thus the greater the profits. The figure above shows the performance of the enterprise with the highest CSE ($120,439).



5. RESULTS OF COMPARATIVE ANALYSIS

Once we have selected the most significant variables, determined the efficiency and inefficiency levels and calculated and visualized the level of efficiency of each enterprise, we can proceed to analyse the enterprises individually or by sub-group.

5.1 Analysis of efficiency of enterprises in the leading, intermediate and trailing groups

The seven parameters having the greatest effect on CSE were calculated for all 31 enterprises. Average values for these parameters were then calculated for each sub-group based on their CSE level.

TABLE 9: Sub-group averages for parameters and CSE

PARAMETERS	UNIT	LEADING	INTER.	TRAILING	AVERAGE
CSE		61,951	14,155	-20,722	14,822
Kg fish/day fished	kg/day	5,595	4,010	3,746	4,291
Kg fish/brake horsepower	kg/BHP	1,067	768	715	820
Kg fish/hour trawled	kg/hr	374	268	244	285
Invest.boat/kg fish	$/kg	1.45	2.28	3.33	2,040
Invest.boat/day fished	$/day	8,372	9,558	12,121	10,034
Wage exp./t fish	$/t	94	126	145	124
Fuel cost/t fish	$/t	54	63	83	67
Overall efficiency		3.4/7	-.46/7	-2/7	0/7

The enterprises in the leading group earned an average CSE of $61,951. To achieve this level, we see that these enterprises performed better in the catch, investment and expense fields than the intermediate and trailing group.

The leading group caught 1,585 kg more fish per day fished that the intermediate group and 1,850 more fish per day than the trailing group. Variances of the same type were also found for the parameters quantity of fish caught per unit of engine power and per hour trawled.

This catch performance was obtained with a boat investment per day fished of $8,372 compared to the intermediate and trailing groups, which had to invest $9,558 and $12,121 respectively, or $1,186 and $3,749 more than the leading group. The same holds true for the parameter boat investment per kg of fish, which is less than half that of the trailing group.

Spending on wages and fuel was also done rationally. Wage expense was $94, or $32 less than the intermediate group and $51 less than the trailing group. Fuel costs were $54/tonne, $9/tonne less than the intermediate group and $29/tonne less than the trailing group. Enterprises in the leading group were, on average, more efficient than those in the intermediate and trailing groups, and this explains why the captain's standardized earnings (CSE) were higher than for the other two groups.

5.2 Efficiency analysis by enterprise (see Appendix 1)

Examining the results obtained by individual enterprises (see Appendix 1), we see that there is considerable variation in captain's standardized earnings (CSE), and that this variation in CSE is due in part to the performance of enterprises: thus, a higher CSE results in higher overall efficiency. Among other things, the enterprise with the highest CSE was efficient for all parameters and obtained an overall efficiency score of 7/7, while the enterprise with the lowest CSE had a score of -6/7. More generally, the leading group scored overall efficiency of 3.4 out of 7, while the intermediate and trailing groups had overall efficiency scores of -.46/7 and -2/7 respectively.

For most of the enterprises, the parameters selected provided indications of why good CSE performance was or was not obtained. A personalized diagnosis could subsequently be produced for each enterprise, showing some avenues the owner might explore to improve performance.

6. DIAGNOSIS OF AN ENTERPRISE

An enterprise diagnosis is sent to each fisherman who participated in the Cost and Earnings study. This diagnosis enables him to make comparisons with all the other fishermen in the fleet. To make the diagnosis accessible and comprehensible, this chapter provides a reading guide that will enable fishermen to grasp the entire contents of the diagnosis.

The example chosen is the case of an actual enterprise, which ranked fifteenth (#15) in terms of captain's standardized earnings (see Appendix 1). Selection was made on purely instructional grounds.

The diagnosis each fisherman receives begins with a description of the characteristics of the enterprise: boat, fishing effort, etc., together with averages for the sample. Next comes the balance sheet, then the income statement, and finally the comparative analysis.

6.1 Presentation of physical characteristics of the enterprise

This section may be used to compare the enterprise with the average enterprise in the sector, and may also explain some financial results.

TABLE 10: Physical characteristics of Enterprise #15 and the average enterprise

	Average	Enterprise #15
Age of boat	6 years	2 years
Overall length	57'16"	54'33"
Gross tonnage	53.51 tonnes	48 tonnes
Brake horsepower	426.61 BHP	500 BHP
Number of trips	23 trips	19 trips
Days fished	81.4 days	73 days
Days at sea	105.6 days	96 days
Hours trawled	1,229 hours	1,092 hours

This fisherman has a newer, more powerful boat than the average. If the fisherman finds that the results in the analysis that follows are not sufficiently satisfactory, he will know that he has the technical capacity to increase his fishing effort, particularly if he is below the average for days fished and days at sea. He could make a greater fishing effort if necessary to improve his performance, provided he can increase his fishing quota (possibility of transferring individual allocations).

6.2 Enterprise balance sheet and income statement

From the balance sheet, he can compare his assets, the value of his boat (purchase cost), level of indebtedness, percentage of owner's equity, etc. The fisherman more concerned about this performance could even calculate and analyse certain financial ratios.

From the income statement, the fisherman may examine the flow of funds in his enterprise and see how CSE is calculated compared to cash flow. For example, the table below might show him how he compares with the average if he is aiming at high income by maximizing his earnings rather than minimizing
expenses. The ideal, of curse, would be to optimize income through a perfect combination of earnings and expenses.

TABLE 11: Balance sheets for Enterprise #15 and average enterprise

ASSETS	AVERAGE	ENTER. #15	LIABILITIES	AVERAGE	ENTER. #15
Boat	788346	1000000	Prov. govt.	352880	-0-
Vehicles	11725	-0-	Banks	189733	1000000
Facilities	2774	10000	Finance co.	-0-	-0-
Equipment	665	-0-	Plant	1613	-0-
Gear	24403	12000	Other	807	-0-
			TOTAL LIABILITIES	545032	1000000
			OWNER'S EQUITY	282881	22000
TOTAL	827914	1022000	TOTAL	827914	1022000

A number of conclusions may drawn from the balance sheet. We note that Enterprise #15 has more assets than the sample average. This is due to the value of the boat, which was purchased only recently.[6] It should also be noted that this enterprise carries much more debt that the average. The owner's equity ratio[7] is 2.2%, while the average for the sector is 34%. This situation is indicative of a very high risk in the event of unforeseen fluctuations in earnings.

The income statement for this enterprise shows higher sales than the sector, resulting in lower than average cash flow (-$49,300). But when we assign a return on assets in calculating the captain's standardized earnings (CSE), the situation changes. From a lower than average cash flow (-$49,300), the enterprise rises slightly above average for CSE ($15,688.59).

In future, the manager should envisage measures aimed at correcting this situation. Comparative analysis is just the tool needed to identify those areas where he should concentrate his efforts.

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[6] See physical characteristics of enterprise.

[7] Owner's equity ratio = $\frac{\text{Owner's equity}}{\text{total assets}} * 100\%$

TABLE 12: Income statement for Enterprise #15 and average enterprise

	AVERAGE	ENTERPRISE #15
INCOME		
Sales of fish	174,101.80	229,752.00
EXPENSES		
Fuel	21,747.80	24,537.00
Bait, ice and salt	3,280.10	3,273.00
Provisions	4,798.00	4,010.00
Unemployment insurance	720.80	495.00
CSST	2,043.60	2,793.00
Other labour	2,351.00	-0-
Other variable costs	2,582.20	1,904.00
VARIABLE EXPENSES	37,523.50	37,012.00
MAINT.REPAIR EXP.	7,804.00	2,995.00
ENGINE MAINT.REP.	6,394.70	5,895.00
FIXED COSTS	16,824.50	19,630.00
CREW WAGES	41,010.80	88,840.00
TOTAL EXPENSES	109,558.40	154,372.00
GROSS MARGIN	64,543.10	75,380.00
Gear purchases	2,016.10	-0-
Repayment of capital	21,096.20	91,421.00
Interest expense	18,098.80	33,259.00
CASH	23,331.90	-49,300.00
Depreciation	21,820.40	25,250.00
Return on capital	27,900.70	34,441.41
CSE	14,821.90	15,688.59

*Sales of fish include all other forms of income derived from use of boat.

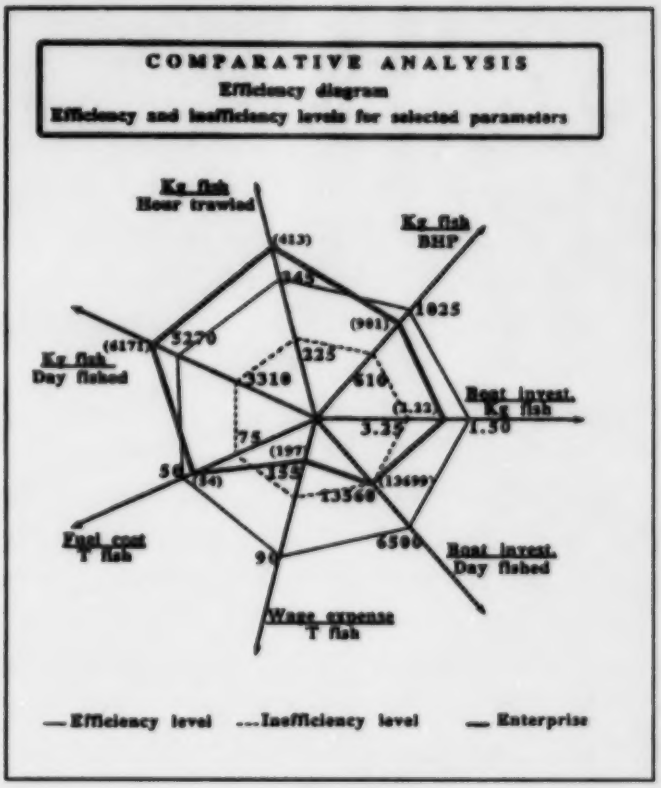
6.3 Comparative analysis applied to Enterprise #15

This is the part of the report fishermen look forward to most. It gives the results of the comparative analysis in the form of figures and tables for each enterprise.

6.3.1 Representation of efficiency diagram

Figure 3:

To facilitate interpretation of comparative analysis results, this type of diagram, in conjunction with the table below, will provide rapid indications on aspects that should be improved in order to improve profitability or earnings. The solid line forming the irregular polygon shows the performance of the trawler in comparison with the efficiency and inefficiency levels (regular polygons) previously calculated.



6.3.2 Diagnosis of Enterprise #15

To enable the fisherman to absorb all these figures, a mini-diagnosis provides a brief explanation of the results of the comparative analysis. This is done in three stages, for the CATCH, INVESTMENT and COST areas. Here is an example of a diagnosis for Enterprise #15.

1° <u>Catch parameters</u>

Parameters in this area are indications of the quantity of fish the fishermen should catch based on the number of days fished, trawling time and the brake horsepower of the boat.

Enterprise #15 is above the average performance for the sample. This enterprise catches 6,717 kg of fish per day fished, 901 kg more than the efficiency level. The same is true for the quantity of fish per hour trawled, which is 413 kg/hr, 68 kg more than the efficiency level. Since these parameters are a partial reflection of efficiency in the CATCH area, we may conclude that this enterprise is managing quite well in this area, compared to other enterprises, and that it is efficient. There could nevertheless be some improvement in performance with respect to use of boat power. Enterprise #15 lands 901 kg per unit of power, whereas the efficiency level is 1025 kg/BHP.

2° **Investment parameters**

The parameters in this area provide the manager with information on the catch quantities and level of boat use per day fished required to earn a profit from investments.

This enterprise has a boat investment per day fished of $13,699/day, $7,199/day more than the efficiency level, and 399 kg/day more than the inefficiency level. This give us an idea of the degree of difficulty this enterprise experiences in recovering the high cost of the boat. A boat this expensive should not spend too much time at the wharf, and the fisherman should obtain additional quantities of fish (if quotas become transferable) and spend more days fishing if he wants a higher CSE.

3° **Cost parameters**

This area is an indicator of total variable amounts the fisherman should (or should not) spend for wages and fuel to catch a tonne of fish.

We see that, in this area, the enterprise studied could make improvements in the area of wages. Its costs here were over $197 per tonne of fish landed, compared to the efficiency level of $90 per tonne. Fuel expenses are lower than the sample as a whole, and the enterprise

is near the efficiency level for this parameter.

Table 13: Enterprise #15 results for various technical and economic efficiency parameters

PARAMETERS	# 15	EFFICIENCY	INEFFIC.	NOTE
Kg fish / day fished	6,171	> 5,270	< 3,310	+1
Kg fish / BHP	901	> 1,025	< 610	0
Kg fish / hour trawled	413	> 345	< 225	+1
Boat invest. / tonne	2.22	< 1.50	> 3.25	0
Boat invest. / day fished	13,699	< 6,500	> 13,560	-1
Wages / t fish	197	< 90	> 155	-1
Fuel / t fish	54	< 50	> 75	0
TOTAL / 7	TOTAL OF +1, 0 and -1			0

BHP is the unit used to measure brake horsepower.

If we compile the efficiency scores for each parameter, Enterprise #15 would obtain an overall efficiency score of 0[8] in 1989.

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8 We note that for this enterprise (#15) CSE is a better reflection of technical/economic efficiency than cash flow. The overall efficiency score is average (0) and CSE is in the average rage ($15,688.59), while cash flow is well below average (-$49,300). This is a good example of the importance of choosing an independent variable (CSE) that compares all enterprise on the same basis.

CONCLUSION

What is the magic formula for an efficient enterprise? The answer to this question lies in an examination of the three parameter areas, CATCH, INVESTMENT and COSTS.

CATCH parameters

The efficient enterprise tries to catch more than 5,270 kg of fish per day fished, and over 345 kg per hour trawled. It also catches over 1025 kg of fish per unit of brake horsepower. This takes care of the catch area.

INVESTMENT parameters

It achieves this catch efficiency with a boat investment[9] of not more than $1.50 per kilogram of fish sold and not more than $6,500 per day fished.

COST parameters

It is also an enterprise that controls wage and fuel costs by spending no more than $50 for fuel and $90 in wages per tonne of fish sold.

After analysing the results obtained for all 31 groundfish trawlers, we arrived at some key conclusions.

Efficiency in one parameter or one parameter area is never enough for a good level of earnings, while inefficiency in an entire area often results in poor earnings. For good earnings, the enterprise must be efficient in all three areas, but it is better to be average throughout than excellent on one parameter and poor on others.

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9 Boat investment = Cost of boat + additions and modifications.

Once we have determined the actual situation of a number of fishing enterprises, we can better judge the progress margin that remains and what we must attempt to achieve in order to make the fishing industry profitable and competitive.

We hope that this study will assist certain fishermen to take steps in this direction.

METHODOLOGY

- Sample:

Thirty-one of the 49 Quebec fishermen on individual allocations, having a boat measuring 50' to 64'11", were visited. Based on landing ports, the final sample was distributed as follows:

Newport	16 boats
Rivière-au-Renard	7 boats
Grande-Rivière	3 boats
Paspébiac	2 boats
St. Joachim de Tourelle	2 boats
Cloridorme	1 boat

- Earnings:

Earnings are almost entirely from fish sales. Some fishermen occasionally earn additional amounts for carrying tourists or research trips. The boats in the sample earned an average of $677 in 1989.

- Expenses:

Expenses as a whole may be divided into four distinct types: variable operating costs, variable maintenance and repair costs, gear costs and fixed costs.

Variable operating costs:

Costs related directly to fishing operations, varying with the quantity fished. Fuel, bait, ice, salt, provisions, unemployment insurance and CSST contributions, and labour other than crew are the main expenses we considered to vary with the volume of catch or use of assets.

Variable maintenance and repair costs:

Part of variable costs related to the use of various boat components such as the hull, engines, deck equipment, electronic equipment and facilities. The cost of maintenance and repairs to vehicles, facilities and equipment are also included in this type of expenses. Additions and modifications are not included.

Gear maintenance and repair

This amount is the cost of maintaining and repairing gear.

Fixed operating costs

Cost that do not vary (or vary little) with the quantity of fish caught. This includes insurance, rental costs, storage, licences and registration, wharfage fees, administrative and legal costs, etc.

Net crew wages

This item includes only wages paid to the boat crew. Other types of labour are included in variable operating costs. This item does not include salary to a captain who is not the owner of the boat. We do not deduct this in order to allow a fair comparison of efficiency between enterprises where owners are captains and those where they are not.

Gross margin

This is the difference between the income and expenses listed above. It is the amount available to repay loans or provide for the replacement of assets (depreciation), pay interest costs or a return on invested capital.

Net gear purchase costs

This is the difference between sales and the total of gear purchases and losses.

Repayment of capital

This item represents the portion of annual payments used to repay loans. It is used in calculating cash flow in that it constitutes an effective outflow of funds but cannot be used in calculating the captain's standardized earnings, where we use instead the formula for deprecation in view of replacing assets.

Interest paid

In calculating cash flow, we deduct interest paid rather than interest due, since this is the actual outflow of funds. This includes all interest paid on loans. In calculating CSE, we would use an amount for return on capital.

Depreciation

The amount set aside to provide for replacement of assets. It is used in particular in calculating the captain's standardized earnings (CSE) but not for calculating cash flow, since it is not an actual outflow of funds. In the CSE calculation, it provides a measure of standardization that allows comparisons to be made between vessels whatever their level of debt. It is calculated as follows:

$$\text{Depreciation} = \frac{\Sigma \text{ depreciation rate X acquisition cost}^{10}}{2^{11}}$$

where Σ is the sum

The depreciation rate is 1/15 for wooden-hulled vessels and 1/20 for steel or fibreglass hulls. Vehicles and gear are depreciated over five years, equipment 10 years and facilities 20 years.

Return on capital

In calculating CSE, return on capital is calculated at a common rate on the acquisition cost[12] for all vessels in order to eliminate differences in earnings due to the size of the operation, leaving in the final analysis only technical/economic efficiency for comparing vessels. The return rate required was determined as follows:

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10 There are some arguments in favour of using fair market value. For technical reasons, we consider instead the acquisition cost. Given the small number of vessels in this fleet, transactions are rare and do not give access to accurate information on the market for boats. For this reason, it was easier for the respondent to determine the acquisition cost (purchase price of boat plus additions and modifications made over the years) for the Costs and Earnings survey than the fair market value.

11 For practical reasons, we have dividied the required depreciation in half. The extent of investment in certain vessels considerably decreased the level of CSE.

12 See note 11.

$$R = T_B - \frac{CPI}{2}$$ [13]

where:

R: Rate of return required on invested capital (3.37%)

T_B: Internal rate of return on 1989 Treasury Bills (12.04%), since this is the rate associated with a null risk.

and

CPI: Average consumer price index in 1989 (5.3%) representing an estimate of average annual inflation or an estimate of the effective annual growth rate (appreciation) in the value of enterprise assets.

1. Calculation of cash flow

Cash flow is the difference between actual cash inflow and outflow as the result of current and financial operations.

From total sales of fish and other forms of income, we deduct the four types of expenses (variable operating costs, variable maintenance and repair costs, gear cost and fixed costs) which caused an actual outflow of funds to obtain the gross margin.

We then deduct crew wages, except the salary paid to the captain, to allow for fair comparison between enterprises where the owner is the captain and those where this is not the case.

We then deduct from this margin the net cost of gear and funds used to repay loans, as well as interest paid, to obtain the figure that will be our cash flow.

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13 For practical reasons, we have halved the required return. The size of investment in some vessels considerably reduced the level of CSE.

2. Calculation of captain's standardized earnings (CSE)

As in the cash flow calculation, we subtract from total income the expenses listed above and wages paid to the crew.

Then, to allow a fair comparison between enterprises whatever their level of debt, we subtract depreciation. To allow for the varying size of enterprises, we then subtract the amount required to provide a return on capital invested, and the result is the captain's standardized earnings.

APPENDIX 1

Income Statement for 31 Enterprises Participating in the Comparative Analysis

No.	INCOME	FUEL	ICE & BAIT	PROVISIONS	UNEMP. INS.	CSST	OTH. LAB. COST	OTH. VAR. COST	TOTAL VAR. COSTS	MAINT. & REP.	MAINT. & REP. GEAR	WAGES	TOTAL FIXED COSTS	TOTAL EXP.	GROSS MARGIN	NET GEAR PURCH	CAP. REINB.	INT. PAID	CASH FLOW	DEPREC.	NET CAPITAL	CAPTAIN'S STANDARD EARNINGS
1	243000	17500	4000	4000	792	4000		2000	32292	5500	2000	36000	11124	86916	156084	5000	10279	8227	132578	17716.67	17928.40	120438.90
2	314286	39623	6234	10500	1821	10211		7298	75687	4500	2000	75896	28234	186317	127969		19386	31796	76787	14167.50	19711.13	94090.37
3	203100	23000	3000	5000	660	3724		2800	38184	4800	5000	44500	12605	105089	98011		7929	3847	86235	22641.67	23337.25	52032.08
4	199500	21411	3132	4702	1156	126		443	30970	4509	11233	36000	14228	96940	102560		7975	7404	87181	21412.75	29673.19	51474.06
5	137615	20800		2700	849			545	24894	3149	5867	21616	8026	63552	74063		17073	34599	22391	11917.47	12739.41	49406.13
6	217700	24487	4617	7542			6650	3610	46906	50129	12600	29996	9563	149194	68506		15115	5043	48348	15850.00	16277.10	36378.90
7	206500	18500		5860	802	2600		3600	31362	5600	4500	49560	21510	112532	93968	20000		9519	64449	27400.00	36733.00	29835.00
8	188950	25000	3120	4450	990	2000		2677	38237	5330	3443	39614	19190	105814	83136		7142	36262	39732	25800.00	34778.41	22557.59
9	221790	29224	3361	4689	870		14827	1434	54465	12091	5877	59599	14860	146892	74898		20442	19094	35362	22572.75	30605.00	21720.25
10	117450	14000	3700	4500	660	3800		5800	32460	4800	1500	28000	10476	77236	40214	12000	3341	3628	21245	9346.67	9304.57	21562.76
11	179217	27209		5380	764	2859		2827	39039	9562	794	40733	16439	106567	72650		22926		49724	25710.60	27446.09	19493.31
12	201713	30518	4476	3895	625	600		447	40561	5977	12173	51056	17549	127316	74397		8081	8503	57813	23270.00	31785.84	19341.16
13	143820	8500	2800	4500	495	2793		1600	20688	2065	3000	21000	20570	67323	76497		69269	42154	-34926	25025.00	34542.50	16929.50
14	89100	9421	2960	4480	1651			4500	23012	10800	1000	24200	5640	64652	24448	12000			12448	4216.67	4448.40	15782.93
15	229752	24537	3273	4010	495	2793		1904	37012	2995	5895	88840	19630	154372	75380		91421	33259	-49300	25250.00	34441.41	15688.59
16	97055	14584	2276	5776	495	658		2613	26402	5700	6000	23837	10370	72309	24746		5633	1040	18073	5287.00	5142.96	14316.04
17	166200	18000	4000		495			2500	24995	3600	8000	45938	16415	98948	67252		12029	8771	46452	23625.00	30532.20	13094.80
18	184262	18882	2797	4958	519	1158		2923	31237	2149	6045	54268	17953	111652	72610		10412	18655	43543	25525.00	34407.70	12677.30
19	229950	30648	4228	5951		1389	16625	3023	61864	14792	10751	62877	18780	169064	60886		7458	10888	42540	23700.00	31138.80	6047.20
20	137160	17000	3000	4500	493	1862		2800	29655	3650	4000	18150	15666	71121	66039		9307	11392	45340	25850.00	34239.20	5949.80
21	136000	18093	4196	3831	493	1862		350	28825	5400	8583	17200	17419	77427	58573			12818	45755	22550.00	30801.80	5221.20
22	132267	16338	3140	4010	1986	1813		2454	29741	5363	9000	24800	11283	80187	52080			12818	39262	24866.67	25275.00	1938.33
23	171600	9540	2585	5527	660	931		2918	22161	3100	4229	52321	22378	104189	67411		7927	30783	28701	30200.00	39934.50	-2723.50
24	174555	25851	3952	2811	1372	732		3051	37769	13883	4692	38670	19814	114828	59727		3633	20379	35715	26986.07	36444.63	-3703.71
25	143036	15640	4500	5000	495	3527		2800	31962	4100	8000	24140	19485	87687	55349		82007	36773	-63431	25525.00	34306.61	-4482.61
26	180852	26628	3328	4741	75	3023	11650	1711	51156	9319	3580	55218	13391	132664	48188		20757	21563	5868	22515.25	30695.99	-5023.23
27	139499	27000	3800	4500	465	1813		1900	39478	3000	5000	21000	19770	88248	51251		74720	42659	-66128	27085.00	35742.22	-11576.22
28	141000	18000	4000	5000	495	2793		1800	32088	3200	6000	39890	17515	98693	42307	6000	9905	13781	12621	23500.00	31678.00	-12871.00
29	214920	31205	3152	3804	248	4830	14130	1582	58951	10992	2193	55098	20518	147752	67168	5000	69874	43565	-51271	34760.00	45481.53	-13073.53
30	183580	26943	3555	4622	1029			2512	38661	10416	15315	78319	17003	159714	23866		10216	15223	-1573	23297.50	31270.23	-38701.73
31	71717	26041	4500	7500	396	1454	9000	3627	52518	11479	19965	13000	34157	131119	-59402	2500	29724	16619	-108245	18862.50	24078.65	-102343.20

Appendix 1 (cont'd.)

Performance of 31 Enterprises
for Comparative Analysis Technical/Economic Efficiency Parameters

No.	CSE	CASH FLOW	Kg day fished	score	Kg hr trawled	score	Kg HP	score	Invest. Kg	score	Invest. day fished	score	Wages Kg	score	Fuel Kg	score	OVERALL
01	120439	132578	6235	1	424	1	1247	1	1.02	1	6333	1	74	1	36	1	7
02	94090	76787	5646	1	377	1	1559	1	0.90	1	5084	1	121	0	63	0	5
03	52032	86235	5028	0	270	0	815	0	1.59	0	8006	0	109	0	56	0	0
04	51474	87181	6085	1	378	1	815	0	2.10	0	12769	0	88	1	53	0	3
05	49406	22391	3258	-1	300	0	747	0	1.41	1	4584	1	85	1	82	-1	1
06	36379	48348	5321	1	375	1	1341	1	0.89	1	4728	1	75	1	50	0	6
07	29835	64449	7591	1	492	1	941	0	2.25	0	17097	1	105	0	39	1	2
08	22558	39732	4784	0	263	0	756	0	2.65	0	12658	0	105	0	66	0	0
09	21720	35362	4287	0	309	0	1187	1	1.85	0	7944	0	161	-1	63	0	0
10	21563	21245	2706	-1	249	0	671	0	1.11	1	3006	1	122	0	61	0	1
11	19493	49724	3450	0	180	-1	756	0	2.41	0	8305	0	148	0	99	-1	-2
12	19341	57813	4095	0	218	-1	1006	0	2.29	0	9381	0	129	0	77	-1	-2
13	16930	-34926	3608	0	243	0	563	-1	3.55	-1	12808	0	75	1	30	1	0
14	15783	12448	2916	-1	242	0	388	-1	0.54	1	1586	1	143	0	56	0	0
15	15689	-49300	6171	1	413	1	901	0	2.22	0	13699	-1	197	-1	54	0	0
16	14316	18073	2600	-1	174	-1	700	0	0.59	1	1535	1	124	0	76	-1	-1
17	13095	46452	4727	0	327	0	766	0	2.59	0	12257	0	139	0	54	0	0
18	12677	43543	5117	0	307	0	892	0	2.84	0	14544	-1	156	0	54	0	-1
19	6047	42540	3911	0	255	0	892	0	1.97	0	7719	0	178	-1	69	0	-1
20	5950	45340	4618	0	307	0	652	0	3.59	-1	16567	-1	66	1	61	0	-1
21	5221	45755	3759	0	251	0	541	-1	3.33	-1	12528	0	64	1	67	0	-1
22	1938	39262	3404	0	289	0	848	0	2.60	0	8840	0	90	1	59	0	1
23	-2724	28701	4310	0	245	0	679	0	3.61	-1	15541	-1	164	-1	30	1	-2
24	-3704	35715	3881	0	336	0	893	0	2.84	0	11037	0	108	0	72	0	0
25	-4483	-63431	4616	0	276	0	572	-1	3.48	-1	16065	-1	84	1	55	0	-2
26	-5023	5868	2990	-1	251	0	717	0	2.40	0	7180	0	186	-1	74	0	-2
27	-11576	-66128	3630	0	196	-1	559	-1	3.63	-1	13182	0	75	1	97	-1	-3
28	-12871	12621	4206	0	250	0	723	0	3.22	0	13552	0	142	0	64	0	0
29	-13074	-51271	4486	0	245	0	947	0	3.05	0	13684	-1	162	-1	73	0	-2
30	-30702	-1573	3636	0	260	0	986	0	2.21	0	8036	0	198	-1	68	0	-1
31	-102343	-108245	1956	-1	141	-1	357	-1	5.53	-1	10815	0	181	-1	215	-1	-6

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